



31 MAY 2005

(43) International Publication Date  
17 June 2004 (17.06.2004)

PCT

(10) International Publication Number  
**WO 2004/051172 A3**

(51) International Patent Classification<sup>7</sup>: **F28D 9/00**, F28F  
21/00, 13/12, F24F 12/00

(21) International Application Number:  
PCT/KR2002/002265

(22) International Filing Date: 2 December 2002 (02.12.2002)

(25) Filing Language: English

(26) Publication Language: English

(71) Applicant (for all designated States except US): **LG ELECTRONICS INC.** [KR/KR]; 20, Yoido-Dong, Yongsongpo-Ku, 150-010 Seoul (KR).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **SHIN, Soo-Yeon** [KR/KR]; Booyoung Apt. 1202-902 Wolsan maeul, Boogok-Li, Jangyu-Myeon, 621-833 Gimhae, Kyungsangnam-do (KR). **LEE, Seong-Hwan** [KR/KR]; Woosong Apt. 102-1303, Namyang-Dong, 641-091 Changwon, Kyungsangnam-Do (KR). **CHO, Min-Chul** [KR/KR]; 812-8, 2/3, Mandeok 1-Dong, Buk-Ku, 616-830 Busan (KR). **LEE, Sung-Hwa** [KR/KR]; Towol Sungwon

Apt. 503-402, Sangnam-Dong, 641-781 Changwon, Kyungsangnam-Do (KR).

(74) Agent: **PARK, Jang-Won**; Jewoo Bldg. 5th Floor, 200 Nonhyun-Dong, Kangnam-Ku, 135-010 Seoul (KR).

(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

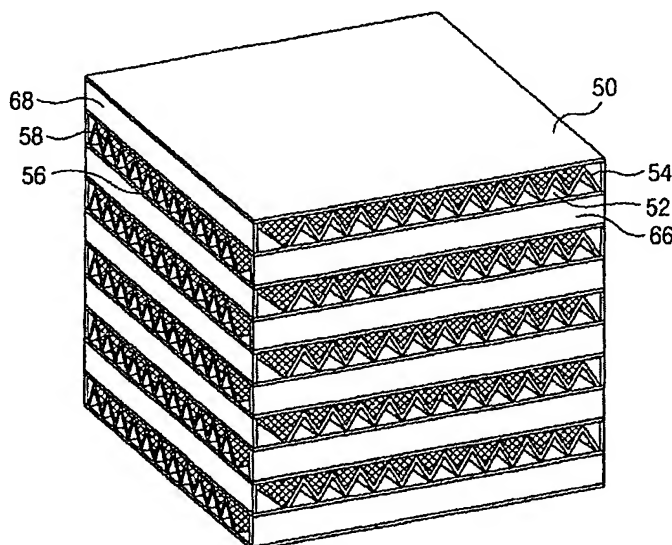
(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

[Continued on next page]

(54) Title: HEAT EXCHANGER OF VENTILATING SYSTEM



(57) Abstract: A heat exchanger (8) of a ventilating system, including a plurality of heat exchanging plates (50) which are laminated at a predetermined interval, a first heat exchange member (54) which is laminated among the heat exchanging plates (50) and is formed in a mesh type to increase turbulence of the outdoor air which flows while being attached on a first air path (52) through which outdoor air passes and a second heat exchange member (58) which is laminated among the heat exchanging plates (50) crossed with the first heat exchange member (54) and is formed in a mesh type to increase turbulence of indoor air which flows while being attached on a second air path (56) through which the outdoor air passes can improve heat transfer performance by increasing turbulence of air by positioning a mesh type heat exchange in a air path through which outdoor and indoor air passes.

WO 2004/051172 A3



— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

**(88) Date of publication of the international search report:**  
3 March 2005

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/KR 2002/002265

## CLASSIFICATION OF SUBJECT MATTER

IPC<sup>7</sup>: F28D 9/00, 21/00; F28F 13/12; F24F 12/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC<sup>7</sup>: F28D, F28F, F24F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI, PAJ, EPODOC

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2001/027552 A1 (CARRIER Corp.) 19 April 2001 (19.04.2001) <i>figures 7-13 and description.</i>	1-3
Y	<i>figures 7-13 and description.</i>	4, 5
X	US 6145588 A (MARTIN et al.) 14 November 2000 (14.11.2000) <i>figure and description.</i>	1, 2, 6-8
Y	<i>figure and description.</i>	9, 10
X	GB 1450460 A (KLÖCKNER-HUMBOLDT-DEUTZ) 22 September 1976 (22.09.1976) <i>figure 6 and description.</i>	1, 2
Y	US 20020011331 A1 (LEHMAN et al.) 31 January 2002 (31.01.2002) <i>figure 2 and description.</i>	4, 5, 9, 10
----		

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

\* Special categories of cited documents:

„A“ document defining the general state of the art which is not considered to be of particular relevance

„E“ earlier application or patent but published on or after the international filing date

„L“ document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

„O“ document referring to an oral disclosure, use, exhibition or other means

„P“ document published prior to the international filing date but later than the priority date claimed

„T“ later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

„X“ document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

„Y“ document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

„&“ document member of the same patent family

Date of the actual completion of the international search

6 December 2004 (06.12.2004)

Date of mailing of the international search report

22 December 2004 (22.12.2004)

Name and mailing address of the ISA/AT

Austrian Patent Office  
Dresdner Straße 87, A-1200 Vienna  
Facsimile No. 1/53424/535

Authorized officer

SCHLECHTER B.

Telephone No. 1/53424/448

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/KR 2002/002265

Patent document cited in search report			Publication date	Patent family member(s)			Publication date
GB	A	1450460	1976-09-22	DE	A	2333697	1975-01-23
US	A	20020011 331				none	
US	A	6145588	2000-11-14			none	
WO	A	20010275 52				none	